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Kaila, L.; Nupponen, K.

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On species related to *Elachista deceptricula* Staudinger, 1880 with descriptions of three new species (Lepidoptera: Elachistidae)

L. Kaila & K. Nupponen

Abstract

The taxonomy of Palearctic *Elachista* species similar to *E. deceptricula* Staudinger, 1880 is revised. Five species are treated: *E. spumella* Caradja, 1920, *E. deceptricula* Staudinger, *Elachista athroa* Kaila, sp. n. from Turkey, *E. conferta* Kaila sp. n. from Spain, and *E. sagara* Kaila sp. n. from Kyrgyzstan. Lectotype is designated for *E. spumella* Caradja. These species are assigned to the *Elachista dispilella* complex sensu Kaila in *Elachista* subgenera *Aphelosetia*. The *E. dispilella* complex now comprises 24 species.

KEY WORDS: Lepidoptera, Elachistinae, *Aphelosetia*, *Elachista dispilella* group, *Elachista dispilella* complex, new species, taxonomy.

**Sobre las especies relativas a *Elachista deceptricula* Staudinger, 1880 con descripción de tres nuevas especies
(Lepidoptera: Elachistidae)**

Resumen

Se revisa la taxonomía de las especies Paleárticas de *Elachista* similares a *E. deceptricula* Staudinger, 1880. Se tratan cinco especies: *E. spumella* Caradja, 1920, *E. deceptricula* Staudinger, *Elachista athroa* Kaila, sp. n. de Turquía, *E. conferta* Kaila sp. n. de España y *E. sagara* Kaila sp. n. de Kirguistán. Se designa el Lectotipo para *E. spumella* Caradja. Estas especies son asignadas al complejo de *Elachista dispilella* sensu Kaila en *Elachista* subgénero *Aphelosetia*. El complejo *E. dispilella* comprende ahora 24 especies.

PALABRAS CLAVE: Lepidoptera, Elachistinae, *Aphelosetia*, grupo *Elachista dispilella*, complejo *Elachista dispilella*, nuevas especies, taxonomía.

Introduction

The *Elachista dispilella* s. l. group comprises species of *Elachista* (*Aphelosetia*) (Elachistidae) generally characterized by white or pale yellowish - greyish forewing, either unicolorous or having two dark spots or an irregular scattering of dark grey or brown scales on forewing as the sole pattern (TRAUGOTT-OLSEN, 1988, 1990, 1992). In the genitalia, members of the *E. dispilella* group are characterized by a narrow valva with an elongate cucullus, the phallus without a caecum, and the basal opening posteriorly oriented in the male genitalia. The papillae anales of the females have ventrally a basal swelling (see KAILA, 1999, 2012 and KAILA & SUGISIMA, 2011 and KAILA *et al.* (2015) for definition and characterization). TRAUGOTT-OLSEN (1988, 1990, 1992) defined three species complexes within the *E. dispilella* group, and a number of taxa were left pending further grouping. The system of Traugott-Olsen was later proven not straightforward (KAILA *et al.*, 2015, KAILA, 2015), and two of these complexes, i.e. *E. triseriatella* and *E. dispunctella* complexes were merged by KAILA (2015). Nor is it possible to delineate unequivocally the *E. dispilella* complexes (KAILA *et al.*, 2015).

Nevertheless, these groupings serve well an orientation in this species-rich group of superficially similar species.

In this paper species that can be associated with *Elachista deceptricula* Staudinger, 1880 are treated. This conglomerate appears not to be 'natural' as a separate group, as all these species could also be placed in the *E. dispilella* complex as defined by TRAUGOTT-OLSEN (1990) even though he did not do so. That convention was also followed by KAILA *et al.* (2015). The species here associated with each other are characterized by a straight, needle-shaped cornutus, often basally with another short one. They also have a large, round or wide gnathos unusual to the *E. dispilella* complex (but see *E. cornuta* Parenti, 1981 and *E. sitibunda* Kaila, 2015). In the absence of any real separating traits the five species treated in the present paper are merged to the *E. dispilella* complex which now comprises the following 24 species:

***E. athroa* Kaila, sp. n.**

- E. bazaensis* Traugott-Olsen, 1990
- E. bigorrensis* Traugott-Olsen, 1990
- E. bruuni* Traugott-Olsen, 1990
- E. conferta* Kaila, sp. n.**
- E. cornuta* Parenti, 1981
- E. curonensis* Traugott-Olsen, 1990
- E. deceptricula* Staudinger, 1880
- E. dispilella* Zeller, 1839
- E. distigmatella* Frey, 1859
- E. festucicolella* Zeller, 1853
- E. filicornella* Kaila, 1992
- E. flavescens* Parenti, 1981
- E. implana* Kaila, 2015
- E. laterotis* Kaila, 2015
- E. levasi* Sruoga, 1998
- E. nitidulella* (Herrich-Schäffer, 1855)
- E. ripai* Kaila, 2015
- E. sagara* Kaila, sp. n.**
- E. sitibunda* Kaila, 2015
- E. spumella* Caradja, 1920
- E. teruelensis* Traugott-Olsen, 1990
- E. turkensis* Traugott-Olsen, 1990
- E. vartianae* Parenti, 1981

Material and methods

Specimens were examined from the following collections:

Bucharest Natural History Museum, Romania (L. Rákosi)

MNCN National Museum of Natural Sciences, Madrid, Spain (A. Vives)

MZH Finnish Museum of Natural History, Zoology Unit, University of Helsinki, Finland (L. Kaila)

ZMUC Natural History Museum of Denmark, Copenhagen, Denmark (O. Karsholt)

Personal collections of Olexey Bidzilya (Kiev, Ukraine), Jari Junnilainen (Vantaa, Finland), Jari Kaitila (Vantaa, Finland), Kari and Timo Nupponen (Espoo, Finland), Zdenko Tokár (Šalá, Slovak Republic) and Bo Wikström (Nummela, Finland).

Terminology of anatomical structures follows TRAUGOTT-OLSEN & NIELSEN (1977), KAILA (1997, 1999), and KAILA & SUGISIMA (2011). The names of new species are nomina in apposition. Characterization of collecting sites in southern Ural region are given in JUNNILAINEN *et al.* (2010)

and KAILA *et al.* (2003). The barcode distance analysis was performed using Kimura 2 Parameter model and kalign alignment.

Elachista spumella Caradja, 1920 (Figs. 4-6, 12, 13, 20)

Elachista spumella Caradja, 1920: 155

Material studied: Type material. Lectotype ♂, here validated: labelled verbatim: Uralsk 15-V-07 [handwritten, white]; LECTOTYPE *Elachista spumella* Car. DES. ♂ Dr. A. Popescu-Gorj [white with red margin]; PREP. GENITALE ♂ 708 U. PARENTI 1974 [red]; LectoTYPUS *Elachista* ♂ *spumella* Car. Teste U: PARENTI 1974 [red] (in Bucharest Natural History Museum, Romania) (examined).

Other material: AUSTRIA: Hundsheim, Hexenberg, 14-VII-2011, 1 ♂, J. Tabell leg. (MZH). HUNGARY: 20 km E Kecskemet nr. Kerekegyhaza vill., 18-VII-2006, 1 ♂, T. Nupponen leg. (L. Kaila prep. 4702, Coll. Nupponen); Csakbereny Bucka-Hegy, 1-V-2003, 1 ♂, L. Srnka leg. (Coll. Tokár). KAZAKHSTAN: [USSR] 43° 24' N 75° 2' E, Dzhambulskaya obl, 70 km NNE Frunze [now Bishkek], 950 m, rocky slope, 19-VII-1990, ad luc., 3 ♂♂, 1 ♀, L. Kaila & K. Mikkola leg., L. Kaila prep. 496, 5044 (MZH). RUSSIA: S. Ural, Cheliabinsk obl., Arkaim, 22-23-VII-1998, 3 ♂♂, 19-V-2004, 1 ♂, K. Nupponen leg.; Orenburg obl., Chalk Hills, 6-VI-1998, 1 ♂, T. & K. Nupponen leg., 3-7-VII-1998, 2 ♂♂, J. Junnilainen leg.; Bashkiria, Kandrykul, 30-V-2001, 1 ♂, 1 ♀, K. Nupponen leg.; Orenburg obl., Kidriasovo, 28-29-V-1998, 13 ♂♂, J. Junnilainen leg., 2 ♂♂, T. & K. Nupponen leg., L. Kaila prep. 3410; Cheliabinsk obl., Kizilskoye, 27-V-1998, 3 ♂♂, J. Junnilainen leg., 8 ♂♂, 1 ♀, T. & K. Nupponen leg., 26-VII-2000, 2 ♂♂, T. Nupponen leg.; Cheliabinsk obl., Moskovo, 26-V-1998, 3 ♂♂, J. Junnilainen leg., L. Kaila prep. 3123, DNA sample 21327 Lepid. Phyl., 11-12-VII-1998, 3 ♂♂, 1 ♀, 2-VI-2004, 4 ♂♂, K. Nupponen leg.; Orenburg obl., Kuvandyk, 19-VII-1998, 2 ♂♂, K. Nupponen leg.; Orenburg obl., Verbljushka, 30-V-12-VI-1998, 2 ♂♂, J. Junnilainen leg., 30-V-1998, 1 ♂, 14-16-VII-1998, 5 ♂♂, T. & K. Nupponen leg., 13-V-1999, 1 ♂, 28-VI-2003, 2 ♀♀, K. Nupponen leg., DNA sample 21328 Lepid. Phyl.; Orenburg obl., 40 km W Orsk, nr. Guberlya vill., 20-V-2004, 4 ♂♂, 1 ♀, K. Nupponen leg.; Volgograd obl., nr. Olhovka vill., 16-18-V-2005, 4 ♂♂, K. Nupponen leg., L. Kaila prep. 4833 (Coll. Junnilainen, Nupponen, MZH). Ul'yanovsk obl., Vasil'evka, Novospasskoe distr., 130 km S Ul'yanovsk, 53° 05' N 48° 07' E, 17-19-VII-1999, 1 ♂, V. V. Zolotuhin leg.; Beketovka, Veshkayma distr., 130 km W Ul'yanovsk, 11-13-VII-1998, 2 ♂♂, A & V. B. Isajev leg.; Akulovka, Nikolaevka distr., 150 km SWS Ul'yanovsk, limestone steppe, 53° 06' N 47° 29' E, 5-8-VI-2000, 5 ♂♂, 3 ♀♀, V. V. Zolotuhin & V. B. Isajeva leg., L. Kaila prep. 6055, 6056, DNA sample 21332 Lepid. Phyl.; Vjazovka, Radishchevo distr., 160 km S Ul'yanovsk, 52° 53' N 48° 26' E, 3-VI-1993, 1 ♂, 29-V-2000, 2 ♀♀, V. V. Zolotuhin leg., L. Kaila prep. 4134 (MZH); SW Altai, Katun valley, 10 km W. Katanda, 6-8-VII-1983, 7 ♂♂, Exp. Mikkola, Hippa & Jalava leg., L. Kaila prep. 357, 358, 459, 460 (MZH); SW Altai, Katun valley, 51° 35' N 85° 55' E, 10 km SE Ust-Sema village, 23-VI-2000, 2 ♀♀, T. & K. Nupponen leg., DNA sample 21316 Lepid. Phyl. (Coll. Nupponen, MZH); Tuva Rep. 50° 44' N 93° 08' E, 1000 m, E. Tannu-Ola Mts, Irbitei reg., stony steppe slopes, 13-16-VI-1995, 15 ♂♂, 1 ♀, J. Jalava & J. Kullberg leg., L. Kaila prep. 1665, 1675, 1679, 1681, 2209, 3980, DNA sample 21330 Lepid. Phyl. (MZH). UKRAINE: Crimea, Karadag, 3-VII-1989, 1 ♂, Yu. Budashkin leg., L. Kaila prep. 3427 (MZH); Kamennie Mogilnyi, 14-19-VII-1994, 2 ♂♂, 1 ♀, A. Bidzilya leg. & Coll.; Tsernomorskiy zapovednik, Ivano-Frankivskiy, 24-V-2000, 1 ♂, E. Rutjan leg. (Coll. Bidzilya).

Diagnosis: *Elachista spumella* is an externally variable species, both in size (wingspan varying from 7 to 12 mm) and in forewing coloration that varies from nearly snowy white, creamy to pale ochreous, sometimes with scattered brown scales. Such specimens resemble, e.g., *E. arenbergeri* Traugott-Olsen (cf. KAILA *et al.*, 2015) and *E. rutjani* Kaila (cf. KAILA, 2011) neither of which, however, possess the plical or discal spots on the forewing. Usually a moth of the general *dispilella* group habitus can be suspected to be *E. spumella* by the somewhat narrower forewing shape as compared to most others. Juxta lobes are either devoid of setae, or sometimes with one seta laterally, on a swelling of varying size, yet never as conspicuous as in *E. laterotis* Kaila, 2015 (cf. KAILA *et al.*, 2015). These species are readily separated by the shape of the cornutus, which is small and inconspicuous in *E. laterotis*. The most characteristic trait in the male genitalia of *E. spumella* is indeed

the very long and narrow, spiniform cornutus which is almost half the length of the phallus. The female genitalia are generally similar to several other members of the *E. dispilella* complex, but the very large and broad signum is characteristic.

Barcode data (n= 9). Maximum intraspecific variation 1.23 %; distance to the closest relative *E. conferta* Kaila, sp. n., 2.7 %.

Distribution: Austria, Hungary, Kazakhstan, Russia (European part, Siberia, Tuva), Ukraine.

Biology: SZÖCS (1981) reports *Festuca vaginata* Walldst. & Kit. ex Willd. (Poaceae) as a host plant. The species prefers xerothermic habitats, and is common in steppes from East Europe to southern Siberia.

Remarks: Even though widespread and common in eastern Europe eastwards to S. Siberia and Tuva, this species has remained not well known. This is likely due to that, to our knowledge, it has only once been illustrated in literature (BIDZILYA *et al.*, 2016).

Elachista deceptricula Staudinger, 1880 (Figs. 7, 8, 14, 21)

Elachista deceptricula Staudinger, 1880: 409. Type locality: Turkey: Amasia, Caraman (Staudinger 1880: 409. Lectotype ♂ designated by Nielsen & Traugott-Olsen (1978), in ZMHB, illustrated by Nielsen & Traugott-Olsen (1978) (not examined).

Material studied: BULGARIA: Kresna, 7-V-2014, 1 ♂, J.-P. Kaitila leg., L. Kaila prep. 6050 (Coll. Kaitila); Sandansko Pole, 41.597300° N 23.225308° E, 23-IV-2014, 6 ♂♂, 1 ♀, J.-P. Kaitila leg., L. Kaila prep. 6050, 6051, 6054 (Coll. Kaitila (MZB)); 5 km N Sandanski, 15-VI-1-VII-2009, 1 ♂, N. Savenkov leg., Lepid. Phyl. 22122 (Coll. H. Roweck); Sandanski, Drag Dallas, 41.597247° N 23.224926° E, 1-12-VIII-2013, 45 exx., N. Ryholm & B. Wikström leg., L. Kaila prep. 5800, 6052 (Coll. Wikström, MZH); Struma river valley, Ilindentsi, 500 m, 29-IV-2013, 18 ♂♂, J. Junnilainen leg., L. Kaila prep. 6061 (Coll. Junnilainen, 1 ♂ in MZH). GREECE: Lakonia, Palaeopanagia, 12 km S. Sparti, 350 m, 23-VII-1998, 1 ♂, B. Skule & D. Nilsson leg. (L. Kaila prep. 4683, ZMUC); Makedonia, Kastoria, 11-X-2014, 2 ♂♂, T. Nupponen leg., L. Kaila prep. 6049 (Coll. Nupponen, MZH); Makedonia, Kozani, 23-24-V-2003, 1 ♂, J.-P. Kaitila leg., L. Kaila prep. 4137 (MZB); Makedonia, 15 km W Kozani, Metamorfosi, 22-V-2003 1 ♂ J.-P. Kaitila leg. (L. Kaila 3942), 1 ♂, J. Junnilainen leg. (L. Kaila prep. 6048 (Coll. Junnilainen); Delfi, 22-IV-2006, 3 ♂♂, J. Junnilainen leg.; Kozani environs, 26-IV-2006, 3 ♂♂, 3 ♀♀, 21-24-V-2003, 2 ♂♂, 3 ♀♀, J. Junnilainen leg., L. Kaila prep. 6053 (Coll. Junnilainen, MZH); Sterea Ellada, 10 km NW Arachova, Mt. Parnassos, 1350 m, 7-8-VI-2006, 2 ♂♂, J. Junnilainen leg., DNA sample 5418 Lepid. Phyl. (Coll. Junnilainen, MZH). TURKEY: prov. Konya, Aksehir 30 km SW, Sultan Daglari Mts., 1200 m, 6-7-V-1996, 2 ♂♂, 19-20-V-1997, 6 ♂♂, 1 ♀, K. Nupponen & J. Junnilainen leg., L. Kaila prep. 2485, 4726, 6057, 6058, DNA sample 21325 Lepid. Phyl. (Coll. Junnilainen, Nupponen, MZH); prov. Konya, 35 km SW Aksehir, Cetince, 1200 m, 9-13-V-2000, 23 ♂♂, 3 ♀♀, J. Junnilainen leg., L. Kaila prep. 4727, 6047, 6060, DNA sample 21322 Lepid. Phyl., (5 ♂♂, 2 ♀♀ in MZH); prov. Kayseri, Incesu, 1100 m, 28-VII-1996, 1 ♂, Stovgaard leg. (L. Kaila prep. 4326, ZMUC); Cappadocia, Ürgüp, 19-21-VII-1998, 4 ♂♂, J. Junnilainen leg. (L. Kaila prep. 4734, 6045, 6062); 5 km NE Aksaray, 19-V-2005, 2 ♂♂, J. Junnilainen leg. & Coll; Cappadocia, 5 km S Urgüp, 18-V-2005, 2 ♂♂, J. Junnilainen leg., L. Kaila prep. 5046, 6059 (MZB, Coll. J. Junnilainen); Cappadocia, Mustafapasa, 17-V-2005, 1 ♂, J. Junnilainen leg., L. Kaila prep. 6046 (MZB).

Diagnosis: *E. deceptricula* is a chalky or creamy white species, usually with pronounced plical and discal spots, and forewing costa narrowly dark grey up to the middle of wing length. It is relatively broad-winged and usually large. However, size varies, apparently at least to some extent geographically. Specimens from the Balkan tend to be smaller than those in Turkey (variation in wingspan 9.5-13 mm). In male genitalia, the length of phallus is equal to, or up to 1.2 times as long as valva. Juxta lobes are devoid of setae. Identification of *E. deceptricula* from the closely related *E. athroa* sp. n. is explained under the diagnosis of *E. athroa*. The female genitalia of *E. deceptricula* are similar to most of the other species of the *E. dispilella* complex, having a narrow colliculum; ductus seminalis inception with a distance from it, and with a sclerotized broadening in the ductus bursae close to inception to corpus bursae. From most of the other species it is distinguishable by the short signum.

Barcode data. Barcode data (n= 13). Maximum intraspecific variation 0.92 %; distance to the closest relative *E. spumella* 4.36 %.

Biology: Larval host plant unknown. The species inhabits various kinds of xerothermic slopes, preferably calcareous sites.

Distribution: Bulgaria, Greece, Turkey, Ukraine.

Remarks: NIELSEN & TRAUGOTT-OLSEN (1978) designated the lectotype of *E. deceptricula* Staudinger, kept in the Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung (Germany, Berlin). The detailed description and illustrations of the lectotype specimen by NIELSEN & TRAUGOTT-OLSEN (1978) makes the identity of the species straightforward.

***Elachista athroa* Kaila, sp. n. (Figs. 9, 15)**

Material studied: Type material. Holotype ♂: TURKEY, prov. Konya, 38° 11' N 31° 14' E, Sultan Daglari Mts., 30 km SW Aksehir, 1200 m, 19-V-1997, K. Nupponen & J. Junnilainen leg., L. Kaila prep. 3022, DNA sample 25503 Lepid. Phyl. (Coll. Junnilainen) (examined).

Diagnosis: *E. athroa* closely resembles *E. deceptricula*. The single known specimen is large-sized with faint plical and discal spots. Usually the wing markings are quite distinctive in *E. deceptricula*. However, both the size and the level of brightness of wing markings vary in *E. deceptricula*, and these traits of *E. athroa* fall, although as extreme, within the variation observed in *E. deceptricula*. The male genitalia of these species differ as follows: the spinose knob of gnathos is square in *E. athroa*, broader than long, often kidney-shaped in *E. deceptricula*; the juxta lobes are distolaterally produced in *E. athroa*, rounded in *E. deceptricula*. The digitate process is broader in *E. athroa* than in *E. deceptricula*. This character may, however, be distorted depending on the pressure applied during genital slide preparation. This phenomenon was controlled during the preparation of an excessive number of slide mounts of *E. deceptricula*. Uncus lobes of *E. athroa* are somewhat longer than those of *E. deceptricula*.

Description: Wingspan 13.5 mm. Length of labial palpus equal to diameter of head; chalky white, second segment fuscous below. Head, neck tuft, tegula and thorax creamy white; scape and pedicel of antenna suffused with ochreous grey, pecten pale brown; flagellum dark grey. Foreleg leaden grey, mid- and hindlegs inwards pale ochreous, outwards grey, spurs somewhat darker. Forewing creamy white, costa narrowly grey from base to middle of wing length; small, elongate, grey spot in the middle of wing length at fold, another similar spot at distal 2/3 of forewing in the middle. Fringe concolorous with ground colour except along dorsal margin pale grey. Hindwing grey, fringe creamy white. Underside of wings grey with concolorous fringe, except along apex of forewing creamy white.

Male genitalia: Uncus lobes 1.5 times as long as broad, distally with a few setae; distally rounded, lateral margin slightly convex. Spinose knob of gnathos large, square. Valva 1.5 times as long as tegumen + uncus, 4.5 times as long as broad at its broadest point; straight; cucullus elongate, as broad as valva in the middle, distally rounded. Juxta lobes distolaterally produced, devoid of setae. Digitate process broad, tongue-shaped, length 1/5 of the length of valva. Phallus 1.1 times as long as valva, evenly weakly bent; apex reinforced, shortly blunt at tip; basal opening posteriorly oriented, caecum absent; length of cornutus 0.3 the length of phallus, consisting of short and broad basal lobe and long and stout, weakly bent spine.

Female: Unknown.

Barcode data: Barcoding of the single known specimen unsuccessful.

Biology: Unknown. The holotype came to light just before sunrise. The habitat is a steep and xerothermic chalk slope exposed to the south (Fig. 1). At the site the species occurs sympatrically with *E. deceptricula*.

Distribution: Only known from the type locality in central Turkey.

***Elachista (Aphelosetia) conferta* Kaila, sp. n. (Figs. 10, 16, 17)**

Material studied: Type material. Holotype ♂: SPAIN, prov. Granada, 10 km NE Baza, 700 m,

37.56361° N 2.70921° W, 13-IV-2014 at 8.00-8.20 a.m., J. Tabell leg., L. Kaila prep. 6037 (MZB). Paratypes (9 ♂♂): SPAIN, prov. Tarragona, 2 km S. Bonastre, 140 m, 26-III-2011, 1 ♂, J. Tabell leg., DNA sample 16590 Lepid. Phyl. (MZB); SPAIN, prov. Aragón, Sastago, 4-V-2005, 1 ♂, J. Junnilainen leg., L. Kaila prep. 5880 (Coll. Junnilainen); SPAIN, prov. Aragón, Caspe, 6-V-2005, 1 ♂, J. Junnilainen leg., J. Tabell prep. 4577, DNA sample 21411 Lepid. Phyl. (Coll. Junnilainen); Spain 41° 21' 42" N 00° 17' 19" E, prov. Aragón, Mequinenza env., 14-VII-2010, 1 ♂, Z. Tokár leg., L. Kaila prep. 5921 (Coll. Tokár); SPAIN, prov. Castellón de la Plana, Sierra Wespadan, 2 km NW Eslida, 400 m, 1-V-1997, 2 ♂♂, P. Skou leg., L. Kaila prep. 4679, 5900 (ZMUC and MNCN); SPAIN, prov. Huesca, 8 km S. of Candasnos, Barranco de Valcuerna, 175 m, 13-14-IX-2002, 1 ♂, P. Skou leg. (ZMUC); Same locality with coordinates 41° 26' 01" N 00° 04' 24" E, 5-VII-2002, 1 ♂, B. Skule leg., L. Kaila prep. 4304 (ZMUC); SPAIN, prov. Alicante, 4 km E of Aspe, by Río Vilalopo, 300 m, 24-V-1998, 1 ♂, P. Skou leg., L. Kaila prep. 4673 (ZMUC).

Diagnosis: *E. conferta* closest resembles *E. sagara* sp. n. The flagellum of the antenna is dark grey in *E. conferta*, brass-colored in *E. sagara*. The forewing of *E. conferta* displays plical and discal spots, while *E. sagara* is unicolorous. Their male genitalia differ by the shape of the uncus lobes: they are distolaterally almost rounded in *E. conferta*, with distinct distolateral corner in *E. sagara*. The cornutus of *E. conferta* consists of a broad, semi-cylindrical basal plate and one almost straight spine with variably sclerotized, smooth lateral lobe. The cornutus of *E. sagara* is otherwise similar, but slightly shorter, and the spine has many wrinkles.

Description: Wingspan 8-11 mm. Labial palpus 0.8 times diameter of head, porrect, third segment ascending; underside to varying extent fuscous, base of third segment usually chalky white; upperside white or faintly ochreous. Head, neck tuft, thorax, scape and pedicel of antenna varying from white to pale ochreous, depending on the general coloration of the specimen. Flagellum varying from dark brown with faint paler annulation to unicolorous dark grey. Foreleg leaden grey, mid- and hindlegs pale ochreous. Forewing ground colour varying from white to pale ochreous, in fresh specimens scales with pale brown tips; elongate spot in the middle of wing length at fold, another similar spot at 2/3 wing length in the middle of wing. Scales concolorous with ground colour. Hindwing lustrous, silvery to pale grey, fringe either concolorous or pale brass-colored. Underside of wings dark grey, fringe on forewing costa ochreous, otherwise white.

Male genitalia: Uncus lobes 1.5 times as long as wide; distolaterally with a few setae. Apex almost rounded, slightly produced distolaterally, lateral margin straight. Spinose knob of gnathos slightly broader than long, otherwise rounded but anterior margin straight or slightly concave. Valva 1.5 times as long as tegumen + uncus, 4.5 times as long as broad at its broadest point; sacculus somewhat dilated, cucullus broader than median part of valva, elongate, distally rounded. Juxta lobes devoid of setae, rounded or a little extended in distolateral direction. Digitate process rather narrow, setose, slightly bent, length / of the length of valva. Phallus as long as valva, broad, evenly weakly bent, apex reinforced, shortly blunt at the very tip; basal opening posteriorly oriented, caecum absent; cornutus / the length of phallus, consisting of broad, semi-cylindrical basal plate and one almost straight spine with variably sclerotized, smooth lateral lobe.

Female. Unknown.

Barcode data (n= 2): Maximum intraspecific variation 0 %; distance to the closest relative *E. sagara* 2.11 %.

Biology: The holotype has been collected by net at dawn, at a temperature of +5 C; most others, if not all, have been obtained by UV light during night. All collecting sites are at low elevation highest site is at 700 m a.s.l. A typical habitat is gypsum soil with sparse vegetation, typically with *Gypsophila*, *Salsola* and *Artemisia*. The species has also been collected in low vegetation grass-shrubland (J. Tabell, pers. comm.). Even though only 10 specimens are currently known, their collection dates span from March, April, May, and July to September. Apparently the species is at least bivoltine.

Distribution: Spain.

Remarks: The record of a specimen resembling *E. deceptricula* from Spain by PARENTI & DOMÍNGUEZ (1995) is probably referable to *E. conferta* sp. n.

Elachista sagara Kaila, sp. n. (Figs. 11, 18, 19)

Material studied. Type material: Holotype ♂: KYRGYZSTAN, Trans-Alai Mts., 3010 m a.s.l., 39° 22' 45.5" N 72° 16' 30.7" E, Altyn-Dara River Valley, 27-VII-2010, K. Nupponen & R. Haverinen leg., L. Kaila prep. 5912, DNA sample 21333 Lepid. Phyl. (Coll. Nupponen). Paratypes (5 ♂♂): 4 ♂♂ with same collecting data as in holotype, L. Kaila prep. 5333; DNA samples 22546, 22549, 22555, 22628 Lepid. Phyl. (Coll. Nupponen, MZH); KYRGYZSTAN, Alai Mts., 3500 m a.s.l., 39° 40' 57.3" N 72° 32' 00.7" E, near Kashka-Suu village, 22-VII-2010, 1 ♂, K. Nupponen & R. Haverinen leg., L. Kaila prep. 5333 (Coll. Nupponen).

Diagnosis: *E. sagara* closest resembles *E. conferta*. Their separation is explained under the diagnosis of *E. conferta*.

Description: Wingspan 10-12.5 mm. Labial palpus 0.8 times diameter of head, slightly ascending, underside to varying extent fuscous, upperside white. Head, neck tuft, thorax, scape and pedicel of antenna chalky white; flagellum brass-colored, unicolorous. Foreleg leaden grey, mid- and hindlegs pale ochreous, spurs and tarsal articles grey especially in midleg. Forewing unicolorous, chalky white. Fringe concolorous. Hindwing lustrous, silvery to pale grey, fringe either concolorous or pale brass-colored. Underside of forewing grey, fringe white; underside of hindwing varying from white to pale grey, fringe concolorous.

Male genitalia: Uncus lobes 1.5 times as long as wide; distolaterally with a few setae; apex distolaterally produced with sharp apex, lateral margin straight. Spinose knob of gnathos rounded, anterior margin straight or weakly concave. Valva 1.5 times as long as tegumen + uncus, 5 times as long as broad at its broadest point; sacculus somewhat dilated, cucullus hardly broader than median part of valva, elongate, distally rounded. Juxta lobes devoid of setae, rounded. Digitate process rather narrow, setose, straight, length/ of the length of valva. Phallus slightly shorter than or as long as valva, evenly bent, apex reinforced; basal opening posteriorly oriented, caecum absent; cornutus 1/5 the length of phallus, consisting of broad, semi-cylindrical basal plate and almost straight, broad, multiply wrinkled spine.

Barcode data (n=5): Maximum intraspecific variation 0 %; distance to the closest relative *E. conferta* 2.11%.

Biology: Unknown. The moths were collected by netting at daylight. The species inhabits dry montane steppes at high altitudes (Figs. 2-3).

Distribution: Only known from a restricted area in the Alai and Trans-Alai Mts. in southern Kyrgyzstan.

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*L. K.

Finnish Museum of Natural History
Zoology Unit
FI-00014 University of Helsinki
FINLANDIA / FINLAND
E-mail: lauri.kaila@helsinki.fi

K. N.

Merenneidontie 19 D
FI-02320 Espoo
FINLANDIA / FINLAND
E-mail: kari.nupponen@kolumbus.fi

*Autor para la correspondencia / Corresponding author

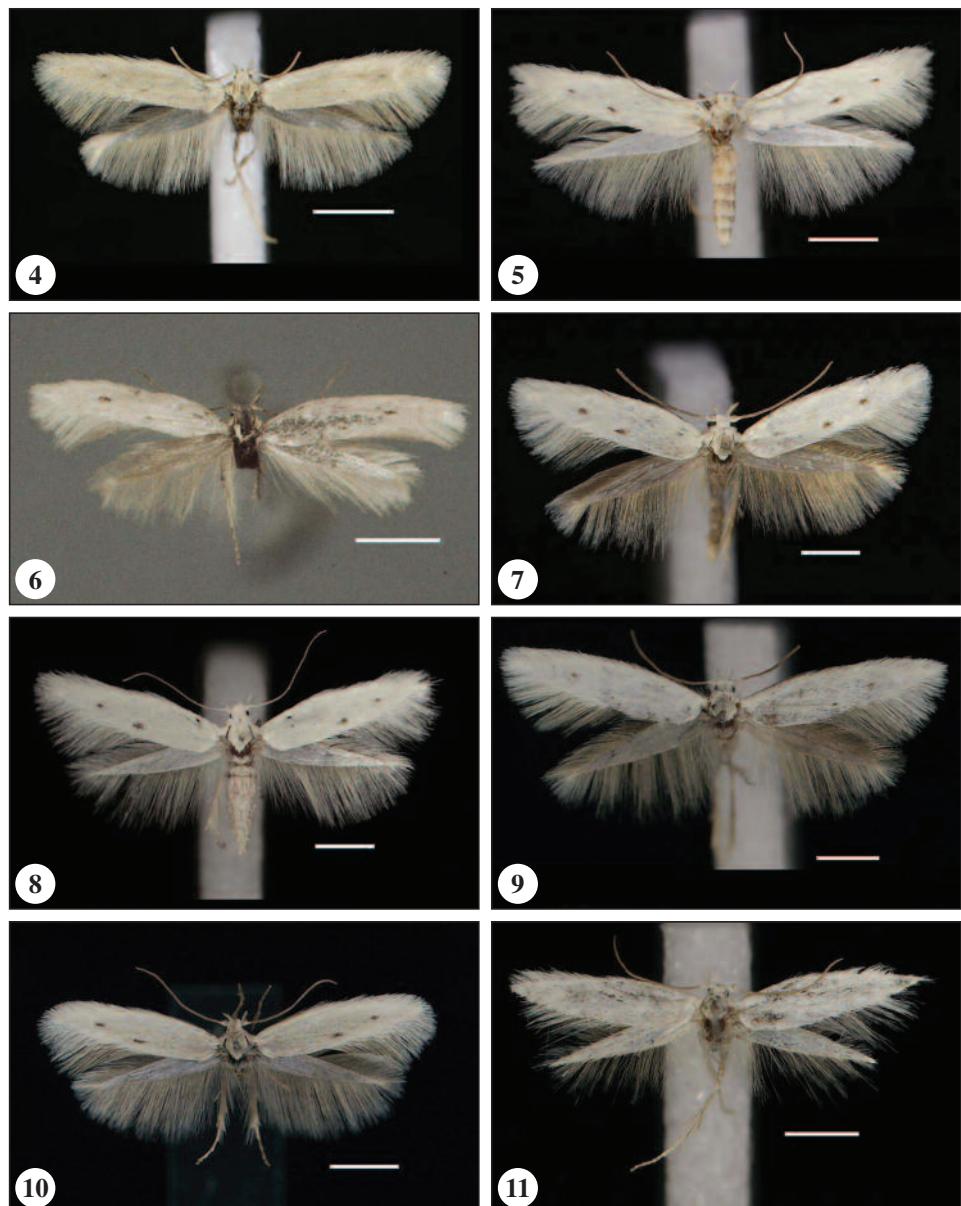
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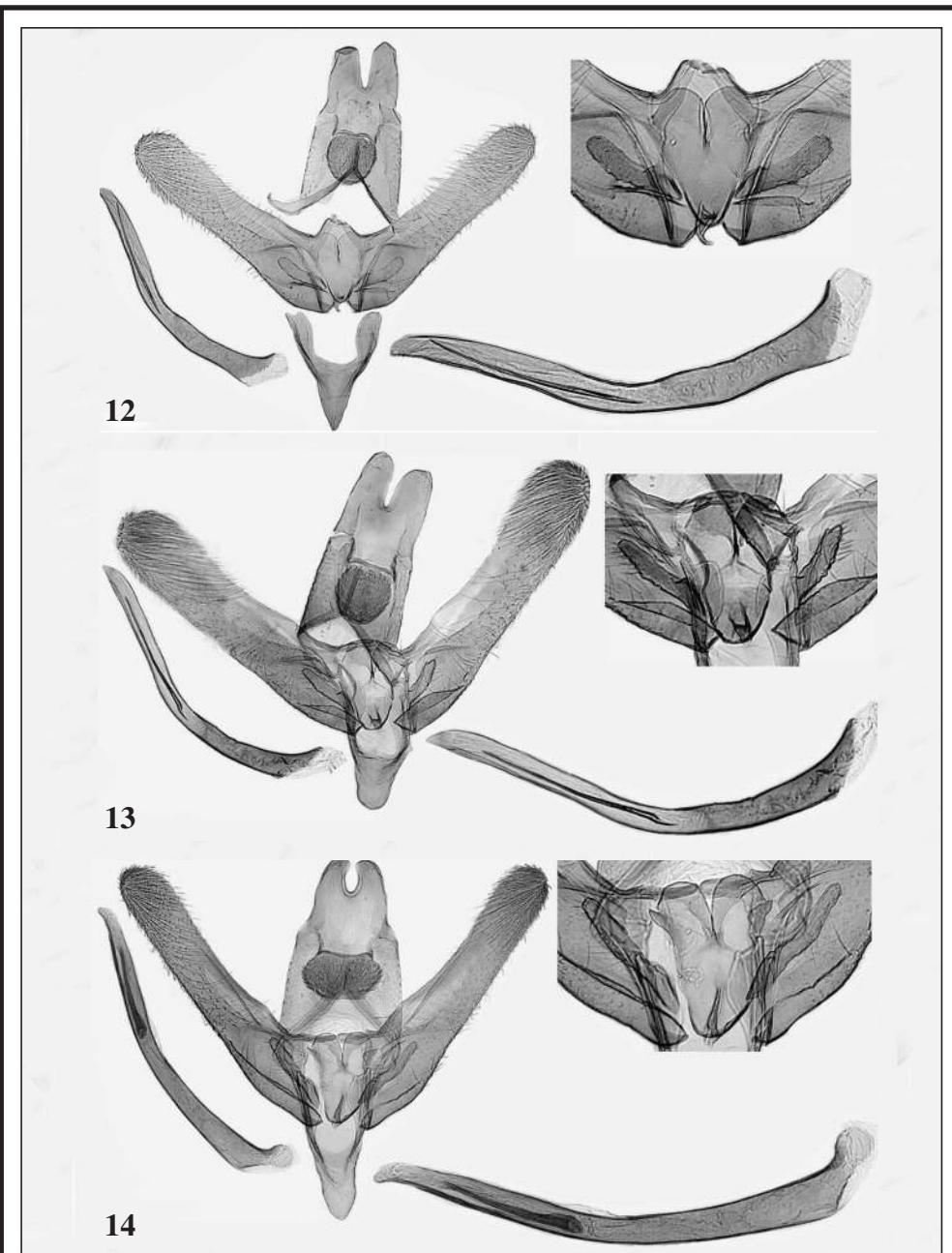
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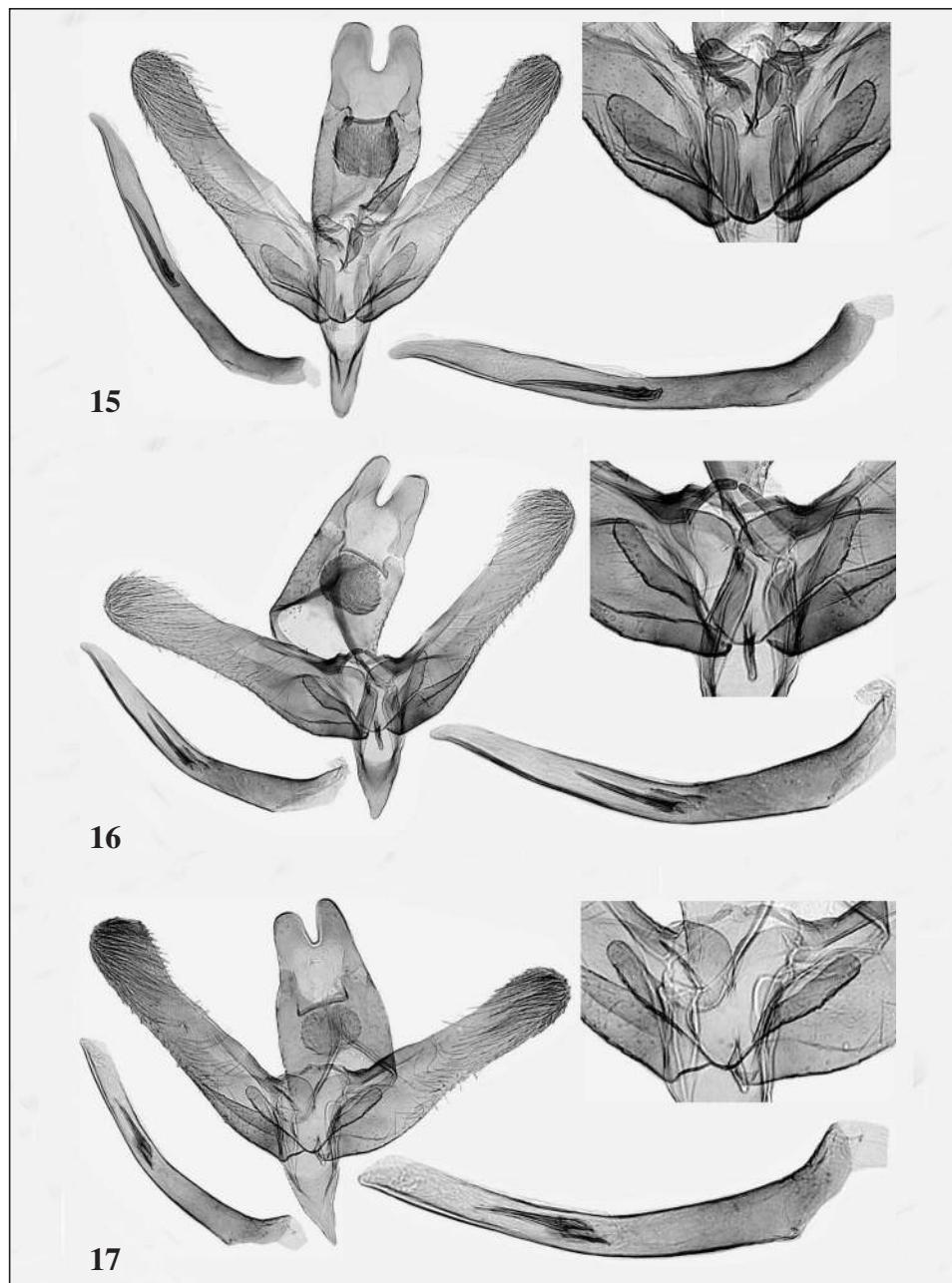
Figs. 1-3.—1. Habitat of *Elachista athroa* Kaila, sp. n.: chalk slope in Sultan Daglari Mts. (1200 m a.s.l.), Central Turkey. 2. Habitat of *Elachista sagara* Kaila, sp. n.: montane steppe in Altyn-Dara Valley, Trans-Alai Mts. (3010 m a.s.l.), Kyrgyzstan. 3. Habitat of *Elachista sagara* Kaila, sp. n.: montane steppe by Kashka-Suu village, Alai Mts. (3500 m a.s.l.), Kyrgyzstan. (Photos K. Nupponen).



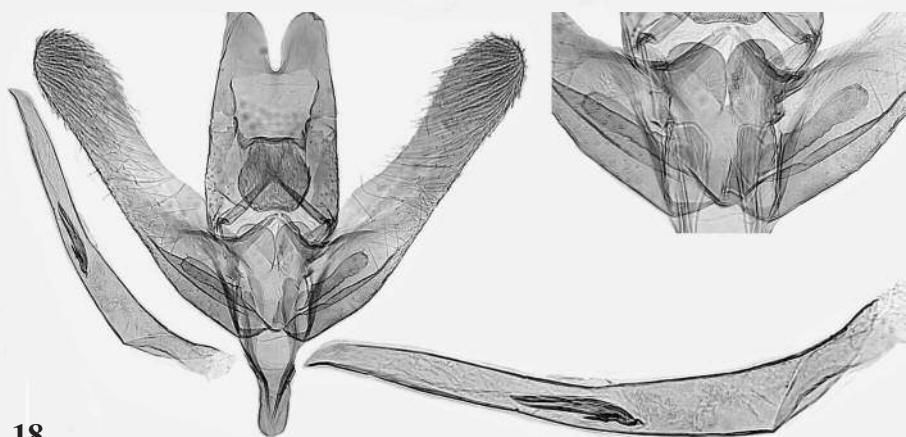
Figs. 4-11.- Adults of *Elachista* spp. **4.** *E. spumella* Caradja, male (Russia, Volgograd distr.). **5.** *E. spumella* Caradja, female (Russia, Altai Mts., Katun valley). **6.** *E. spumella* Caradja, lectotype male (Russia, Uralsk). **7.** *E. deceptricula* Staudinger, male (Turkey, prov. Konya, Aksehir). **8.** *E. deceptricula* Staudinger, female (Turkey, Aksehir). **9.** *E. athroa* Kaila, sp. n., holotype, male. **10.** *E. conferta* Kaila, sp. n., holotype, male. **11.** *E. sagara* Kaila, sp. n., holotype, male.



Figs. 12-14.—Male genitalia of *Elachista* spp. **12.** *E. spumella* Caradja, lectotype male (Russia, Uralsk), U. Parenti prep. 708. **13.** *E. spumella* Caradja, L. Kaila prep. 3123 (Russia, S. Ural). **14.** *E. deceptricula* Staudinger, L. Kaila prep. 2485 (Turkey, prov. Konya, Aksehir).



Figs. 15-17.—Male genitalia of *Elachista* spp. **15.** *E. athroa* Kaila, sp. n., holotype, L. Kaila prep. 3022. **16.** *E. conferta* Kaila, sp. n., holotype, L. Kaila prep. 6037. **17.** *E. conferta* Kaila, sp. n., paratype, L. Kaila prep. 4673.

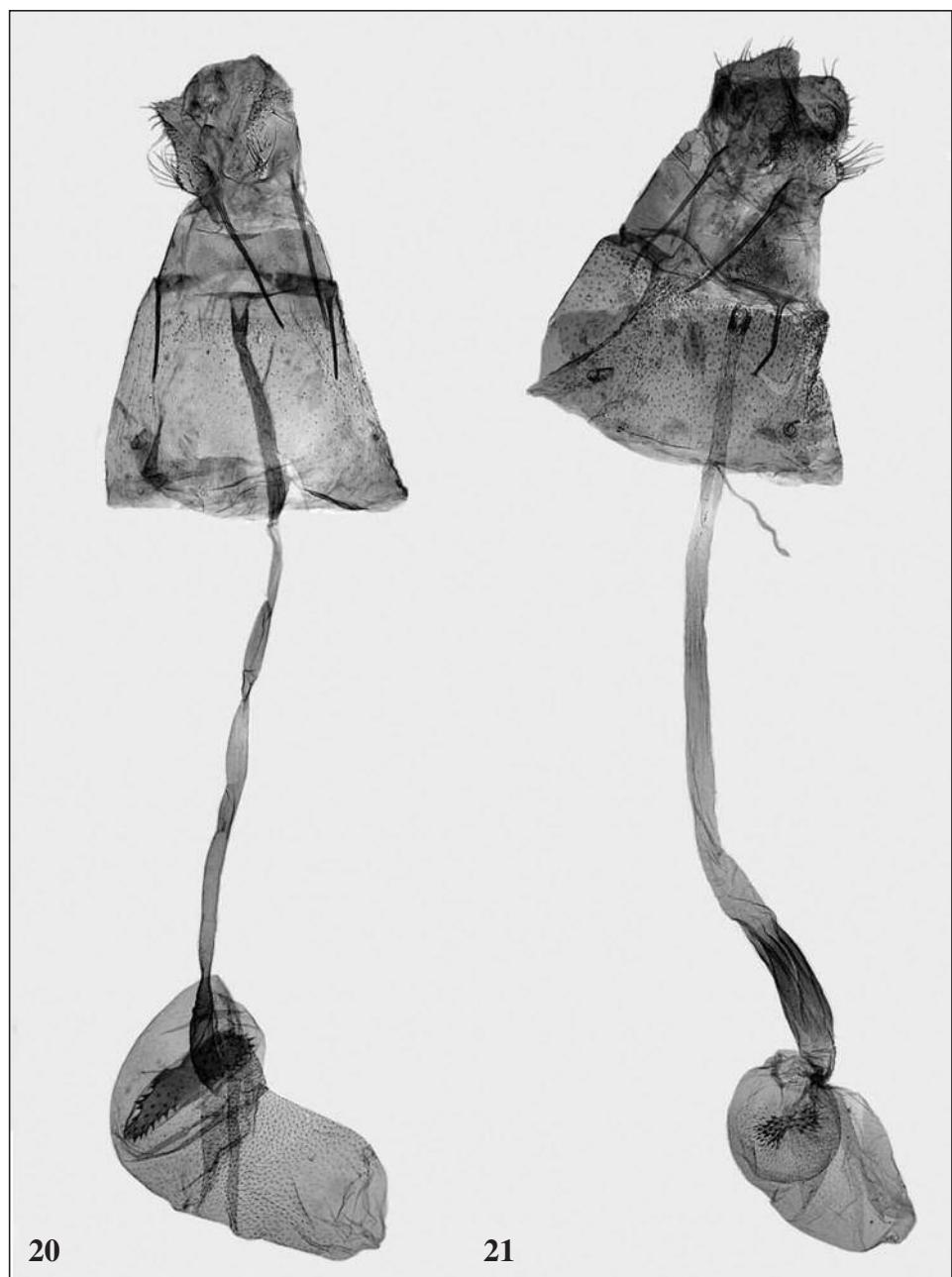


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Figs. 18-19.— Male genitalia of *Elachista sagara* Kaila, sp. n. **18.** Holotype, L. Kaila prep. 5192. **19.** Paratype, L. Kaila prep. 5333.



Figs. 20-21.— Female genitalia of *Elachista* spp. **20.** *E. spumella* Caradja, L. Kaila prep. 6055 (Russia, Ulyanovsk), **21.** *E. deceptricula* Staudinger, L. Kaila prep. 6053 (Greece, Kozani environs).